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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Werner Kiefer

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EXAMINER

DEGHAN, QUEENIE S

ART UNIT

PAPER NUMBER

1791

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,103	Applicant(s) KIEFER ET AL.	
	Examiner QUEENIE DEGHAN	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-29, 32 and 33 is/are pending in the application.
- 4a) Of the above claim(s) 20, 22-24, 27 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-19, 21, 25, 26, 28, 29 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/3/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-10, 12-19, 21, 25-26, 28-29 and 32 in the reply filed on January 4, 2010 is acknowledged.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
3. The disclosure is objected to because of the following informalities: on page 17, lines 12-14 does not appear to recite any equations.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 2-4, 16, 25-27, and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claims 2, 3 and 4 merely recite mathematical equations without reciting any positive step. It is unclear what method steps are actually required.
7. Claim 16 recite introducing molten material into a crucible. It is unclear if the molten material is the same as the melt as recited in claim 13, which claim 16 depends

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on, or if it is a different material. If the molten material is the same as the melt of claim 13, it is unclear how the separate apparatus (the crucible) relates to the process of claims 1 and 13. If the molten material is different from the melt, then what is relationship between the melting unit of claim 1 and the crucible of claim 16. Due to the indefiniteness of the claim, claim 16 cannot be examined.

8. Claims 25-27 depend on claim 24, which has been withdrawn. The limitations of these claims are unclear and cannot be examined.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1-8, 10, 12-14, 17-19, 29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeanvoine et al. (2002/0162358). Jeanvoine discloses a method for melting inorganic material in a melting unit, wherein the walls are naturally cooled, the method comprising selecting a temperature of a melt in the melting unit and selecting a throughput to be adapted to a required residence time ([0019]-[0021]). Jeanvoine also teaches reducing energy cost, hence energy consumption, by melting at lower temperatures ([0019]), which imply selecting a temperature T_{eff} at which an energy consumption is at a minimum. Details regarding the melting temperature were not discussed by Jeanvoine. However, the claims basically recite minimizing the energy utilized in the melting unit by melting at a selected temperature, which is a general goal of many manufacturing processes. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have expected Jeanvoine to operated at a temperature at which energy is consumed is minimized as this is an expected goal for many processes for reducing cost.

13. Regarding claims 2-4 and 29, the claims recite mathematical formulas that energy needed to heat the inorganic material is based on commonly known variables, such as the heat capacity of the melt, volume of the melt, density of the melt and residence time for the melt. Putting in any more energy than what is needed to satisfy

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the bare minimal heating requirement would simply be energy lost to the environment.

Therefore, it would have been obvious to one of ordinary skill in the art to expect the equations of claims 2-4 and the limitation of claim 29 to naturally be satisfied since minimizing energy consumption is recognized as a goal of Jeanvoine.

14. Regarding claims 5-8, Jeanvoine discloses feeding thermal energy directly to the melt by burners and mixing the melt by creating a convective stirring of the melt ([0019], [0026]).

15. Regarding claims 10 and 12, Jeanvoine discloses supplying the inorganic materials in the form of a batch, which is placed onto a surface of the melt ([0030], [0032]). Jeanvoine also teaches adding cullet as the raw materials, which is considered equivalent to pellets.

16. Regarding claims 13 and 14, Jeanvoine teaches refining the melt ([0010]) and producing a convective flow in the melt ([0026]).

17. Regarding claim 17, Jeanvoine discloses refining the melt with a refining agent ([0038]).

18. Regarding claim 18, Jeanvoine discloses in figure 1 continuous feeding and removing of the inorganic materials to and from the melt ([0032]).

19. Regarding claim 19, Jeanvoine discloses an optimal temperature for melting down the batch ([0039]).

20. Regarding claim 32, Jeanvoine discloses a residence time that comprises a melt-down time ([0032]).

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21. Claims 9, 15, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeanvoine et al. (2002/0162358) in view of Nier (3,811,860) and Nattermann (2002/0112507). Jeanvoine does not disclose a temperature difference in the melt. Nier teaches a process for melting inorganic materials comprising a melting unit wherein a melt temperature difference between an inner region of the melt and an outer region of the melt is greater than 250 degrees and that such a temperature difference creates a convective flow to the melt (col. 7 lines 15-60). Nier further mentions the melt is discharged to other parts such as refining sections along path D (figure 1). However Nier does disclose the specific viscosity of the melt. Nattermann teaches the viscosity of a melt must be sufficient low to be refined, such as 10Pas ([0029]). It would have been obvious to one of ordinary skill in the art at the time of the invention to have expected a similar viscosity as taught by Nattermann for the melt of Nier to produce the convective flow and a melt sufficient for refining, such as the melt along the flow path D in figure 1.

22. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeanvoine et al. (2002/0162358) in view of Siebers et al. (2002/0023463). Jeanvoine teaches the use of refining agent to assist in refining the melt, resulting in a lower refining temperature. Siebers teaches proper refining is important for removing bubbles from the melt and can be performed by adding a refining agent and alternatively by applying a high temperature to the melt, such as greater than 1750°C ([0033]). It would have been obvious to one of ordinary skill in the art at the time of the invention to have raised the temperature of the melt in the refining stage to a temperature greater than

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1750°C as an alternative to the fining agent of Jeanvoine as it predictably provides for a successful means for removing bubbles in the melt, as taught by Siebers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUEENIE DEHGHAN whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Queenie Dehghan/
Examiner, Art Unit 1791